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Serpulidae (Annelida, Polychaeta) Collected around Nii-jima and Ō-shima, Izu Islands

By

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今島 実：伊豆諸島の新島と大島周辺海域から得られた
カンザシゴカイ類（多毛環虫類）

A benthic survey was carried out around Nii-jima and Ō-shima, Izu Islands, in July, 1977, by the National Science Museum, Tokyo, for the Natural History Research Project of the Japanese Islands.

The Izu Islands are situated south of Sagami Bay (Fig. 1), and comprise from north to south: Ō-shima, To-shima, Nii-jima, Shikine-jima, Kozu-shima, Miyake-jima, Mikura-jima, Hachijo-jima, Aoga-shima and Tori-shima. The two islands Nii-jima and Ō-shima thus belong to the northern Izu Islands.

Meanders of the Kuroshio current hit Nii-jima and Ō-shima directly in spring and summer. Although the Kuroshio shifts down south in autumn and winter, the islands

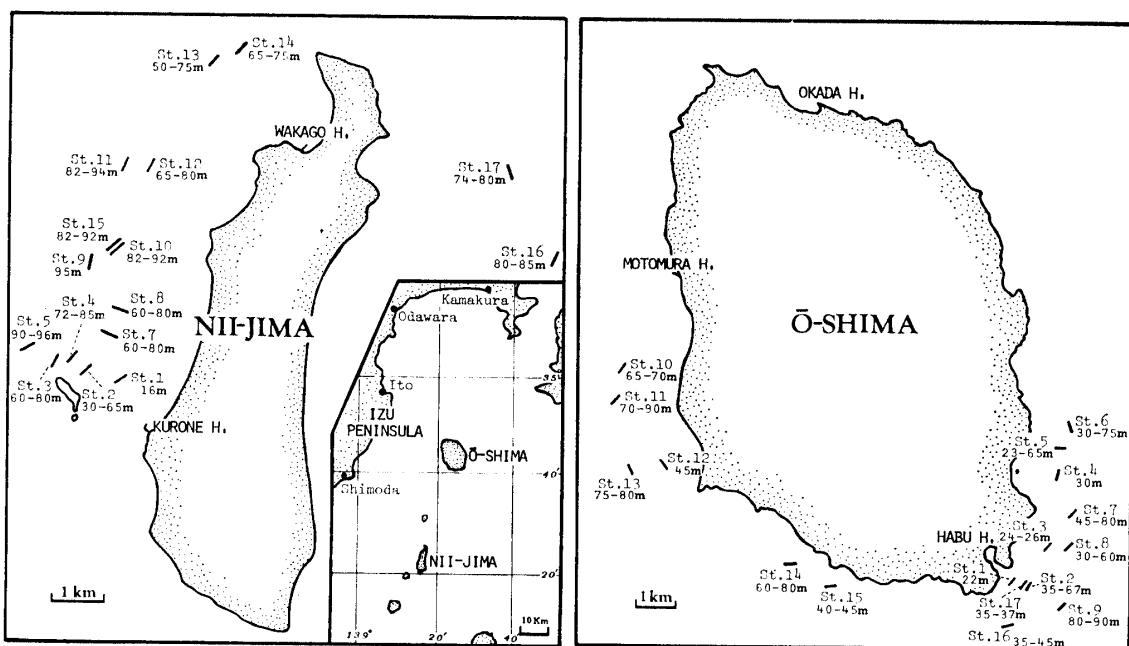


Fig. 1. Maps of Nii-jima and Ō-shima, showing the position of the stations of the survey.

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are situated thus close to the landward edge of the warm core of the current, that they still are influenced mainly by warm currents even in winter. Thus sea-surface temperatures range from 15°C to 28°C.

Although many polychaetes have been obtained in this survey, by hand in the intertidal region and by dredging in depths from 16 to 94 m, this report deals with species of the Serpulidae only. Twenty-five species in 11 genera were recognized. The material includes three new species of the genus *Metavermilia* and a new species of the genera *Pseudovermilia* and *Semivermilia*. Three genera, *Pseudovermilia*, *Semivermilia* and *Placostegus* have not been previously reported from Japanese waters. The well-known circum-subtropical fouling species *Hydroides dirampha*, the Indo-Pacific species *Serpula* cf. *kaempferi*, and the essentially North Atlantic species *Placostegus tridentatus* are reported for the first time from Japan.

Thanks are due to Mr. T. KUSAKARI, Director, and Mr. M. KOIZUMI, Researcher, of the Ōshima Branch of the Tokyo Fisheries Experimental Station, for their understanding and cooperation in undertaking the present survey. The author wishes to express his thanks to Dr. H. A. TEN HOVE of the Laboratory for Zoological Ecology and Taxonomy, Utrecht, the Netherlands for critically reading the manuscript and for valuable suggestions with regard to the taxonomic problems.

The bulk of the collection, including type-specimens, has been deposited in the National Science Museum, Tokyo; a small part is in the collection of TEN HOVE, Utrecht, nr. tHU 293-300.

List of species represented:

<i>Serpula</i> cf. <i>kaempferi</i> (KINBERG, 1867)	<i>Vermiliopsis labiata</i> (COSTA, 1861)
<i>Hydroides fusca</i> IMAJIMA, 1976	<i>Pseudovermilia pacifica</i> sp. nov.
<i>Hydroides tuberculata</i> IMAJIMA, 1976	<i>Semivermilia elliptica</i> sp. nov.
<i>Hydroides fusicola</i> MÖRCH, 1863	<i>Metavermilia acanthophora</i> (AUGENER, 1914)
<i>Hydroides albiceps</i> (GRUBE, 1870)	<i>Metavermilia spicata</i> IMAJIMA, 1977
<i>Hydroides ezoensis</i> OKUDA, 1934	<i>Metavermilia inflata</i> IMAJIMA, 1977
<i>Hydroides multispinosa</i> MARENZELLER, 1884	<i>Metavermilia ovata</i> sp. nov.
<i>Hydroides dirampha</i> MÖRCH, 1863	<i>Metavermilia gravitesta</i> sp. nov.
<i>Pomatoleios krausii</i> (BAIRD, 1865)	<i>Metavermilia truncata</i> sp. nov.
<i>Spirobranchus latiscapus</i> (MARENZELLER, 1884)	<i>Placostegus tridentatus</i> (FABRICIUS, 1780)
<i>Spirobranchus</i> cf. <i>polytrema</i> (PHILIPPI, 1844)	<i>Ditrupa arietina</i> (O. F. MÜLLER, 1776)
<i>Spirobranchus giganteus corniculatus</i> (GRUBE, 1862)	<i>Protula tubularia caeca</i> IMAJIMA, 1977
<i>Vermiliopsis infundibulum/glandigera</i> -group	

Genus **Serpula** LINNAEUS, 1758

Serpula cf. **kaempferi** (KINBERG, 1867)

(Fig. 2, a-u)

Zopyrus Kaempferi KINBERG, 1867, p. 351.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 11 (3 specimens). Off Ōshima, dredge sta. 6 (12), sta. 8 (1), sta. 11 (2), on gravel.

DESCRIPTION. A large specimen is about 14 mm in length, including operculum, and about 0.9 mm in width in the thorax; it consists of 77 segments.

The branchiae have 8 to 11 gill-radioles on either side, which end in slender, pinnule-free tips. The basal portions of the gill-radioles are not connected by a branchial membrane; they are arranged in two semicircles.

The opercular peduncle is cylindrical and arises from the left or right branchial lobe,

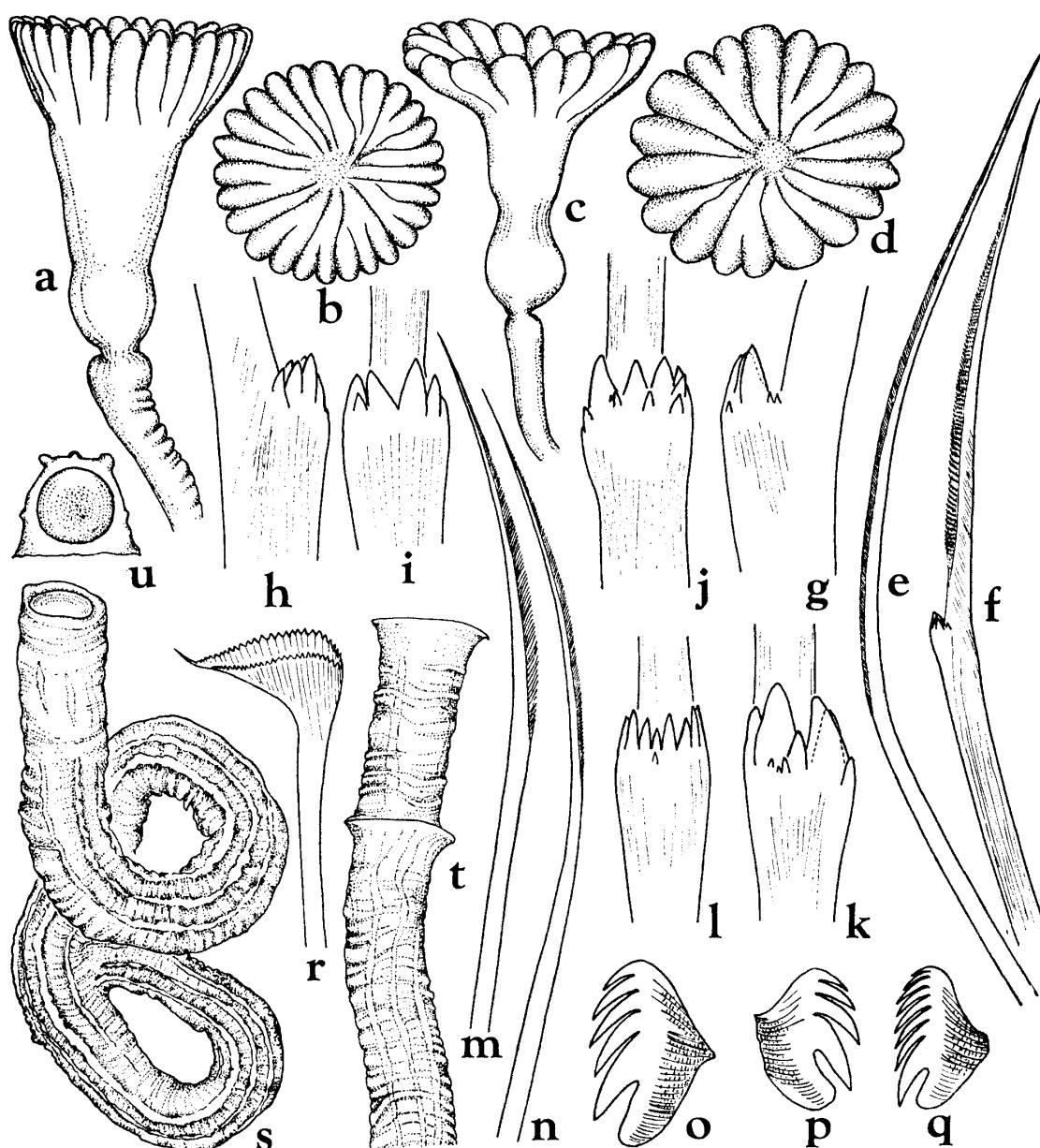


Fig. 2. *Serpula* cf. *kaempferi* (KINBERG). a-d, two opercula, lateral and frontal views, $\times 40$; e, thoracic limbate capillary seta, $\times 335$; f, thoracic bayonet-shaped seta, $\times 335$; g-l, parts of bayonet-shaped setae, showing teeth at the base of the blade, in lateral and frontal views, $\times 825$; m, n, thoracic setae, $\times 335$; o, thoracic uncinus, $\times 825$; p, anterior abdominal uncinus, $\times 825$; q, posterior abdominal uncinus, $\times 825$; r, abdominal seta, $\times 825$; s, t, tubes, $\times 9$; u, cross-section of tube, $\times 9$.

just below the first normal filament; a rudimentary operculum is situated at the opposite side. The opercular funnel is shallow to nearly flat, and has 20–26 blunt marginal teeth. The grooves between the teeth reach nearly to the center of the funnel; at the outer side they cover only 1/3 of the length of the funnel. There is a constriction near the basal part of the funnel (Figs. a-d). The collar has one ventral and two latero-dorsal lobes, which are continuous with the thoracic membranes, which are broad anteriorly, narrowing near the 4th setiger and end at the posterior margin of the last thoracic segment; they are not united ventrally on the first abdominal segments.

The thorax has 7 to 9 segments, 6 to 8 of which are uncinigerous. The collar setae are of two types; slender, limbate capillaries (Fig. e) and bayonet-shaped setae, with 3 to 4 large and a variable number of small teeth at the base of the blade (Figs. f-l). The remaining thoracic setae are thick (Fig. m) and slender (Fig. n) limbate capillaries; the thoracic uncini are subtriangular, with 5 teeth in one row (Fig. o). Anterior abdominal uncini have 4 teeth in one row (Fig. p); posteriorly the number of teeth increases to 8 in the posterior segments (Fig. q). The abdominal setae are trumpet-shaped distally, with about 30 minute teeth in lateral view (Fig. r); they are replaced by long capillary setae in the posterior segments.

The tube is irregularly coiled. It is sub-trapezoidal in cross-section, with 3 to 5 longitudinal ridges and many transverse wrinkles. The surface of the tube is predominantly orange, markedly so on the ridges, though the tubewall and innerside are white. Free, erect parts of tubes are cylindrical, the ridges are generally less pronounced and sometimes even absent; this part may bear peristomes (Figs. s-u).

REMARKS. The genus *Serpula* is badly in need of a revision. About 17 species have been described from the Indo-Pacific Region, 8 of which are characterised by a number of opercular radii of 15–25: *S. hartmanae* REISH, 1968, *S. lineatuba* STRAUGHAN, 1967, *S. rubens* STRAUGHAN, 1967, *S. vasifera* HASWELL, 1885, *S. vittata* AUGENER, 1914, *S. watsoni* WILLEY, 1905 and *S. zelandica* BAIRD, 1865. According to their original descriptions they disagree with *Serpula* cf. *kaempferi* in the following respects: *S. hartmanae* apparently has *Crucigera*-like extensions at the base of the operculum; *S. lineatuba* and *S. rubens* have 9–10 thoracic segments, and different tubes; *S. vasifera* has a more deeply cupped operculum and more branchial filaments, it apparently is a larger species; *S. vittata* is very similar to the material described here regarding its yellow-brown tinged, 5-ridged tube and its collar setae, however, its opercular funnel is deeper and its branchial filaments are more numerous (18–20); *S. watsoni* has an extremely long opercular funnel; *S. zelandica* finally has a smooth white tube. If these differences are real or due to a different method of observation, can only be concluded from actual comparison of material. In doing so, doubtlessly some names will prove to be synonymous, maybe even with species from other zoogeographic regions, not taken into account here. Although *S. kaempferi* is not described very well, it apparently is the most likely name for the Japanese material described above. A certain identification will have to wait for the comparison with the type-material.

The species is new to the Japanese fauna.

DISTRIBUTION. Bangka Strait, North Celebes; southern Japan (30–94 m depth).

Genus **Hydroides** GUNNERUS, 1768**Hydroides fusca** IMAJIMA, 1976

Hydroides fusca IMAJIMA, 1976 a, pp. 130–131, fig. 6, a-i; 1976 b, p. 231; 1977, p. 94.

MATERIAL EXAMINED. Off Ō-shima, dredge sta. 5 (6), sta. 6 (2), on gravel.

DISTRIBUTION. Southern Japan (Tanega-shima, Kagoshima Bay, Tsushima Strait, Ogasawara Islands; 23–115 m depth).

Hydroides tuberculata IMAJIMA, 1976

Hydroides tuberculata IMAJIMA, 1976 a, pp. 132–133, fig. 7, a-j; 1976 b, p. 233.

MATERIAL EXAMINED. Off Ō-shima, dredge sta. 17 (1).

REMARKS. The opercular crown has five to six spines, including the dorsal hooked spine; the four to five remaining spines are concave valves, with a small external swelling at their shoulders.

DISTRIBUTION. Southern Japan (Amami-Oshima, Tanega-shima, Kumano; 10–80 m depth); Australia.

Hydroides fusicola MÖRCH, 1863

Hydroides (Eupomatus) fusicola MÖRCH, 1863, p. 374; AUGENER, 1925, p. 18.

Hydroides uncinata: OKUDA, 1937, pp. 63–64, text-fig. 10; 1938, p. 104; USCHAKOV, 1955, p. 427, fig. 161, J, K.

Eupomatus uncinatus: IMAJIMA & HARTMAN, 1964, pp. 368–369; UCHIDA, 1968, p. 610.

Hydroides fusicola: ZIBROWIUS, 1971 a, p. 694; IMAJIMA, 1976 b, pp. 235–236, fig. 1, a-k.

MATERIAL EXAMINED. Wakago Harbour, Nii-jima; intertidally on rocks (5).

DISTRIBUTION. Japan (from Akkeshi, Hokkaido to Ogasawara Islands, up to 207 m depth); South Kuril (up to 30 m depth).

Hydroides albiceps (GRUBE, 1870)

Serpula (Eupomatus) albiceps GRUBE, 1870, pp. 520–521.

Hydroides albiceps: STRAUGHAN, 1967 a, p. 220, fig. 6 (m); IMAJIMA, 1976 a, pp. 133–135, fig. 8, a-v; 1976 b, pp. 234–235.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 10 (1), sta. 13 (1), on shell of small snail, *Phos senticosus*. Off Ō-shima, dredge sta. 6 (6), sta. 11 (3), on gravel.

REMARKS. The largest specimen is 40 mm in length, including branchiae, and about 2 mm in width in the thorax. The opercular crown has 9 to 14 elongate bottle-like spines, and a stout, vesicular dorsal spine, which is globular towards the centre of the crown and has dorso-lateral enlargements.

DISTRIBUTION. Southern Japan (Uotsu, Toyama Pref. to Kabira Bay, Ishigaki-jima, up to 95 m depth); Red Sea; Australia.

Hydroides ezoensis OKUDA, 1934

Hydroides ezoensis OKUDA, 1934, pp. 239–242, text-figs. 5–7; USCHAKOV, 1955, p. 427, fig. 161, A–I; IMAJIMA & HARTMAN, 1964, p. 369; IMAJIMA & HAYASHI, 1969, p. 6; IMAJIMA, 1976 b, pp. 236–237, fig. 2, a–o; GRUET, HÉRAL & ROBERT, 1976, pp. 173–184, pl. 1, fig. 7; ZIBROWIUS, 1978, pp. 141–145, fig. 1.

Hydroides diplochone: ZACHS, 1933, p. 135.

MATERIAL EXAMINED. Habu Harbour, Ō-shima, intertidally on rocks (many).

DISTRIBUTION. Japan (Hokkaido to Kyushu); Peter the Great Bay, USSR.

Hydroides multispinosa MARENZELLER, 1884

Hydroides multispinosa MARENZELLER, 1884, pp. 216–217, pl. 4, fig. 2; MCINTOSH, 1885, pp. 527–528, pl. 29 a, figs. 26, 27; Pl. 39 a, fig. 12; ZIBROWIUS, 1972 a, pp. 443–444, fig. 3; IMAJIMA, 1976 b, pp. 238–240, fig. 4, a–k.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 10 (1), sta. 17 (1), on shells. Off Ō-shima, dredge sta. 1 (4), sta. 5 (4), sta. 8 (1), on gravel.

REMARKS. The opercular crown is a circle of 9 to 13 spines with 6–7 pairs of lateral and 3–4 inner radial processes. The tube is white, thin and has two longitudinal ridges and many transverse wrinkles. It is about 0.8 to 1 mm in diameter near the mouth and is sub-trapezoidal in cross-section.

DISTRIBUTION. Southern Japan (Tomioka Bay, Kagoshima Bay; 22–92 m depth).

Hydroides dirampha MÖRCH, 1863

(Fig. 3, a–j)

Hydroides (Eucarphus) dirampha MÖRCH, 1863, p. 379, pl. 11, fig. 10; AUGENER, 1925, p. 15.

Hydroides (Eucarphus) cumingii MÖRCH, 1863, pp. 379–380, pl. 11, fig. 9.

Eupomatus lunulifer CLAPARÈDE, 1870, pp. 181–182, pl. 31, fig. 3.

Hydroides lunulifera: FAUVEL, 1927, p. 358, fig. 122, p–s; 1953, pp. 458–459, fig. 241, h; DAY, 1967, p. 807, fig. 38. 4. j–k; PILLAI, 1971, p. 113, fig. 7, E.

Eupomatus lunifer: HARTMAN, 1966, p. 237.

Hydroides lunulifer: ZIBROWIUS, 1968, p. 114.

Hydroides dirampha: ZIBROWIUS, 1971 a, pp. 705–707, fig. 6–9; 1973, pp. 31–32.

MATERIAL EXAMINED. Habu Harbour, Ō-shima, intertidally (23).

DESCRIPTION. The largest specimen is, including operculum, about 20 mm in length, and 1.7 mm in width in the thorax; it consists of 131 segments, including the thoracic ones.

The branchiae have 18 to 22 gill-radioles on either side, arranged in a semi-circle, and ending in a slender, pinnule-free tip. The collar has one ventral, and paired latero-

dorsal lobes, which are continuous with the thoracic membranes, ending at the posterior margin of the last thoracic segment.

The peduncle is cylindrical and arises from the left or right branchial lobe, just below and between the first two normal filaments; a rudimentary club-shaped operculum is present at the opposite side. The opercular funnel has 28 to 33 marginal radii with sharply pointed tips; they are brownish distally. The opercular crown is a circlet of 13–14 similar horny spines; the spines are crescent- or anchor-shaped distally, and have a small, basal radial spine (Figs. a-c).

The collar setae are of two types; fine capillaries (Fig. d) and bayonet-shaped setae with two symmetrical conical teeth (Fig. e) at the base of the minutely serrated blade. The remaining thoracic setae are limbate capillaries (Fig. f); the thoracic uncini have 6 sharply pointed teeth, of which the most anterior is the largest (Fig. g). The abdominal uncini are smaller than those of the thorax, but with 8 teeth (Fig. h). The abdominal setae number about 10 in a fascicle; they are trumpet-shaped distally, with about 25 minute

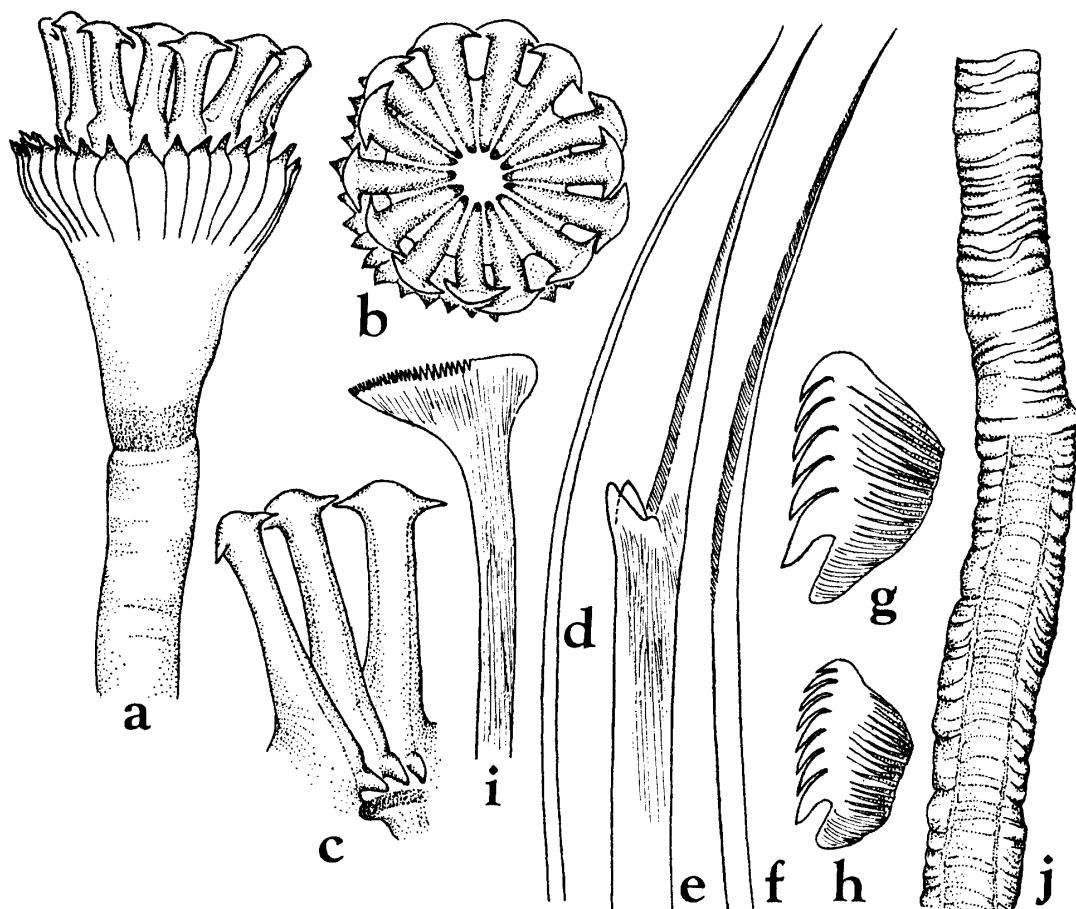


Fig. 3. *Hydroides dirampha* MÖRCH. a, operculum, in lateral view, $\times 20$; b, opercular crown from above, $\times 20$; c, three crown-spines, showing basal radial spines, $\times 40$; d, capillary collar seta, $\times 380$; e, bayonet-shaped collar seta, in lateral view, $\times 380$; f, thoracic seta, $\times 380$; g, thoracic uncinus, $\times 940$; h, abdominal uncinus, $\times 940$; i, abdominal seta, $\times 940$; j, tube, $\times 5$.

teeth in one row and a wide proximal smooth part (Fig. i).

The tube is white, thick-walled; the anterior part is subcylindrical, about 2 mm in diameter; it may slightly turn away from the substrate. The tube has two longitudinal ridges and many transverse wrinkles in its attached older part (Fig. j). The tubes form aggregated masses on rocks, together with tubes of *Hydroides exoensis*.

The species is new to the Japanese fauna.

DISTRIBUTION. Italy; circum (sub-) tropical, in intertidal or littoral depths.

Genus *Pomatoleios* PIXELL, 1913

***Pomatoleios kraussii* (BAIRD, 1865)**

Pomatoleios kraussii: DAY, 1955, p. 449; 1967, pp. 800-801, fig. 38. 3. a-f; IMAJIMA & HARTMAN, 1964, p. 372; STRAUGHAN, 1967 a, p. 235; IMAJIMA, 1968, p. 34; TEN HOVE, 1973, pp. 5-6, fig. 34; IMAJIMA, 1976 a, pp. 135-136; 1977, pp. 100-101.

MATERIAL EXAMINED. Wakago Harbour, Nii-jima, intertidally on rocks (35).

DISTRIBUTION. Tropical Indo-Pacific.

Genus *Spirobranchus* BLAINVILLE, 1818

***Spirobranchus latiscapus* (MARENZELLER, 1884)**

Pomatostegus latiscapus MARENZELLER, 1884, pp. 218-219, pl. 4, fig. 5.

Pomatoceros auritubis MOORE & BUSH, 1904, pp. 174-175; TAKAHASHI, 1938, pp. 217-218; IMAJIMA & HARTMAN, 1964, p. 371.

Spirobranchus latiscapus: FAUVEL, 1936, p. 89; IMAJIMA & HARTMAN, 1964, pp. 373-374; TEN HOVE, 1970, pp. 44-47; BAILEY-BROCK, 1972, pp. 405-408; IMAJIMA, 1976 a, pp. 137-138; 1977, p. 106.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 2 (2), sta. 3 (2), sta. 4 (3), sta. 10 (7), sta. 11 (5), sta. 12 (1), sta. 13 (8), sta. 17 (2). Off Ōshima, dredge sta. 6 (7), sta. 17 (2).

DISTRIBUTION. Japan (up to 180 m depth); Sulu Sea; New Zealand; Hawaiian Islands.

***Spirobranchus* cf. *polytrema* (PHILIPPI, 1844), type B.**

Spirobranchus cf. *polytrema*: IMAJIMA, 1977, pp. 102-106, fig. 9.

MATERIAL EXAMINED. Off Ōshima, dredge sta. 5 (1).

DISTRIBUTION. Mediterranean Sea; Indo-West Pacific; Sri Lanka; Australia; southern Japan (23-65 m depth).

***Spirobranchus giganteus corniculatus* (GRUBE, 1862)**

Spirobranchus giganteus corniculatus: TEN HOVE, 1970, pp. 24-32, figs. 63-73, pl. 2, c; IMAJIMA, 1976 a, pp. 136-137, fig. 9, a-p; 1977, p. 106.

MATERIAL EXAMINED. Kurone Harbour (13), Wakago Harbour (1), Nii-jima, intertidally on rock; off Nii-jima, 30 m, on coral (1).

DISTRIBUTION. Indian Ocean; Malaysian Archi.; Philippines; southern Pacific Islands; N. Eastern Australia; Japan (up to 30 m depth).

Genus **Vermiliopsis** SAINT-JOSEPH, 1894

Vermiliopsis infundibulum/glandigera-group

Vermiliopsis infundibulum: STRAUGHAN, 1967 a, pp. 233–234; 1967 b, p. 35; ZIBROWIUS, 1968, pp. 121–124, pl. 2, figs. 30–33; pl. 3, figs. 1–15; pl. 14, fig. b.

Vermiliopsis infundibulum/glandigera-group: TEN HOVE, 1975, pp. 55–59; IMAJIMA, 1976 a, pp. 139–141, fig. 11, a–o; 1977, p. 95, fig. 4, a.

MATERIAL EXAMINED. Kurone Harbour (53), Wakago Harbour (35), Nii-jima, intertidally on rock. Off Nii-jima, dredge sta. 3 (1), sta. 10 (3), sta. 11 (9), sta. 12 (1), sta. 13 (11), sta. 14 (3), sta. 17 (5). Habu Harbour, Ō-shima, intertidally on rock (2). Off Ō-shima, dredge sta. 5 (1), sta. 6 (12), sta. 11 (1), on gravel.

DISTRIBUTION. Circum (sub-) tropical; Japan (up to 92 m depth).

Vermiliopsis labiata (COSTA, 1861)

Serpula labiata COSTA, 1861, p. 32, pl. 7, fig. 2.

Vermiliopsis labiata: ZIBROWIUS, 1972 b, pp. 117–118; 1973, pp. 45–46; TEN HOVE, 1975, pp. 55–57; IMAJIMA, 1977, pp. 95–97, fig. 4, b–o.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 11 (2), sta. 12 (2), sta. 13 (2), sta. 17 (1). Off Ō-shima, dredge sta. 6 (4), on gravel.

DISTRIBUTION. Southern Japan (30–94 m depth); Mediterranean Sea; Gulf of Guinea.

Genus **Pseudovermilia** BUSH, 1907

Pseudovermilia pacifica sp. nov.

(Fig. 4, a–n)

MATERIAL EXAMINED. Off Ō-shima, dredge sta. 6 (holotype and 17 paratypes), on gravel.

DESCRIPTION. The holotype is, including operculum, 8.5 mm in length, and 0.9 mm in width in the thorax; it consists of 67 segments.

The branchiae have 12 on the right and 13 gill-radioles on the left side, in a pectiniform arrangement. The paratypes have 10–12 gill-radioles on either side. The radioles are not connected by a branchial membrane, and have a slender, pinnule-free tip distally.

The opercular peduncle is inserted to the right at the base of the branchial stem, just below and between the first and second normal filament. It is cylindrical, faintly wrinkled, and has a slightly dorso-ventrally compressed area just below the bulbous part of the operculum. The operculum has a fleshy bulbous part, and a horny, finely ribbed, yellow-brown terminal cap. The latter is composed of 6 diabolo-like tiers; it has a spine on top,

bent ventrally (Figs. a, b). The horny parts of the opercula of the paratypes show some variation, they are short cylindrical to elongate conical, with 3 to 14 diabolo-like tiers; the top of some of them has a distal hook (Fig. c), in the remaining specimens it is a simple hemisphere (Fig. d). The outer flanges of the operculum are the rims of inner partitions; generally there is another internal septum between each two flanges.

The collar has a laciniate margin. It is divided into three regions: an unpaired triangular medio-ventral flap, and paired rounded latero-dorsal lobes. The latter are

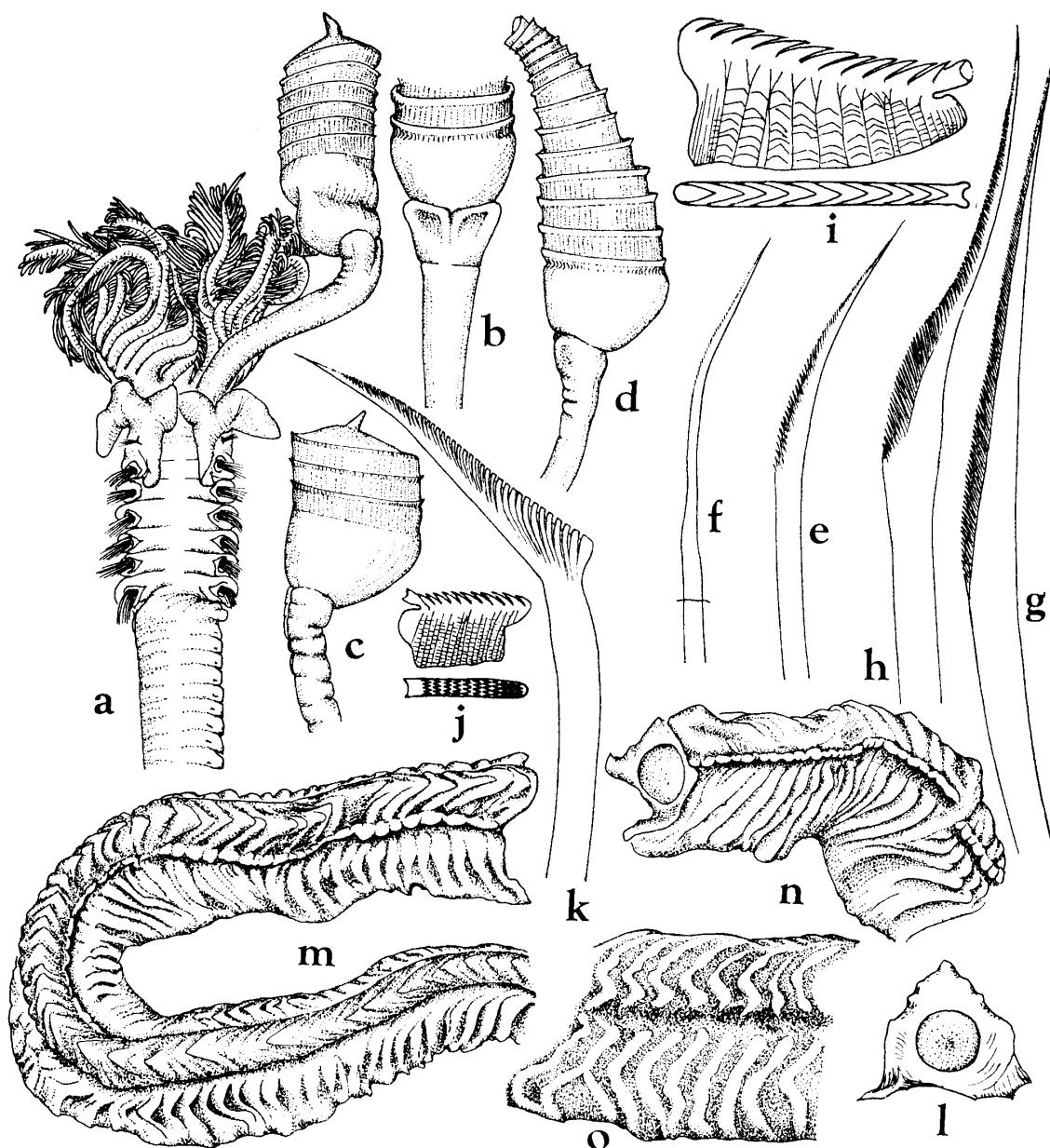


Fig. 4. *Pseudovermilia pacifica* sp. nov. a, anterior end of holotype, in dorsal view, $\times 20$; b, distal part of opercular peduncle, in dorsal view, $\times 28$; c, d, two opercula of paratypes, in lateral view, $\times 28$; e, f, collar setae, $\times 770$; g, thoracic limbate seta, $\times 520$; h, thoracic "Apomatus"-seta, $\times 520$; i, thoracic uncinus, $\times 770$; j, abdominal uncinus, $\times 770$; k, geniculate abdominal seta, $\times 770$; l, cross-section of tube, $\times 16$; m-o, tubes, o, in side view, $\times 16$.

continuous with the thoracic membranes, which end just posterior to the first row of uncini (Fig. a).

The thorax has 7 segments, 6 of which are uncinigerous. The very small bundles of collar setae contain coarse limbate, and slender capillary setae (Figs. e, f). The subsequent thoracic bundles have capillary setae resembling those of the collar (Fig. g) and from setiger 3 onwards, "sickle" or "*Apomatus*"-setae with a denticulate blade and a slightly limbate proximal zone (Fig. h). The thoracic uncini have a single row of 12 to 13 teeth, the anteriormost tooth is gouged, apparently bifurcated (Fig. i).

The abdominal uncini are about half as large as the thoracic ones; they are rasp-shaped along the entire abdomen, with 4 (anteriorly) to 8 (posteriorly) rows of teeth, and a gouged anterior tooth (Fig. j). The abdominal setae are geniculate, with a coarsely denticulate edge (Fig. k); they are replaced by long capillary setae in the posterior segments.

The tube is white, triangular in cross-section; at both sides of the medial keel there is a longitudinal groove (Figs. l-o). There is a median tooth above the entrance of the tube; former median teeth give the medial keel a serrate appearance. Both sides of the tube bear many straight to V-shaped ridges, as in the tube of *Pseudovermilia holcopleura* TEN HOVE, 1975 (pl. 8, c, d).

REMARKS. The tube of *Pseudovermilia pacifica* is extremely similar to that of *P. occidentalis*. However, the operculum of the latter species is dark-brown to black. It also may have a superficial resemblance to the tube of *P. holcopleura*, especially as figured by TEN HOVE (1975, pl. 8, c-d), however, generally the ornamentation is far less pronounced in this species (TEN HOVE, 1975, p. 85). Moreover, *P. holcopleura* is a smaller species, only 0.3 mm wide, with approximately 40 segments only. Finally it is slightly similar to the tube of *P. babylonia*, though the ornamentation in this species is less coarse, and in addition to the toothed median keel it has 2 keels with small teeth, instead of longitudinal grooves. The tubes of the remaining known *Pseudovermilia* species are either smooth (*conchata*), or pitted (*fuscostriata* and *multispinosa*) and differing from that of *pacifica*.

The operculum of *P. pacifica* has a superficial resemblance with the figures of opercula of *P. conchata* and *holcopleura* (as given by TEN HOVE, 1975, figs. 135-141), but these have a more smooth surface. As in *P. babylonia* the operculum has flanges, marking the internal septa of the horny cone; in *babylonia* there are nearly no additional septa; moreover, the thoracic uncini of *babylonia* are differing from those of *pacifica*. (Remarks based upon a personal communication by TEN HOVE).

This is the first record of the genus from Japan.

TYPE-SERIES. Holotype, NSMT-Pol. H 132; 17 paratypes, NSMT-Pol. P 133, tHU 295.

DISTRIBUTION. Southern Japan (30-75 m depth).

Genus **Semivermilia** TEN HOVE, 1975

Semivermilia elliptica sp. nov.

(Fig. 5, a-q)

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 2 (holotype and 38 paratypes), sta. 4 (10), sta. 12 (11), sta. 13 (9), sta. 14 (12), sta. 17 (18). Off Ōshima, dredge sta. 1 (12), sta. 4 (13), sta. 5 (11), sta. 17 (23), attached to shells, corals, gravel and Bryozoan fragments.

DESCRIPTION. The holotype is, including operculum, 5 mm in length, and 0.5 mm in width in the thorax; it consists of 40 segments.

The branchiae have 6 gill-radioles on either side, with a short pectiniform arrangement and not connected by a branchial membrane; the radioles have pinnule-free distal tips.

The opercular peduncle is inserted on the left, just below the first normal filament;

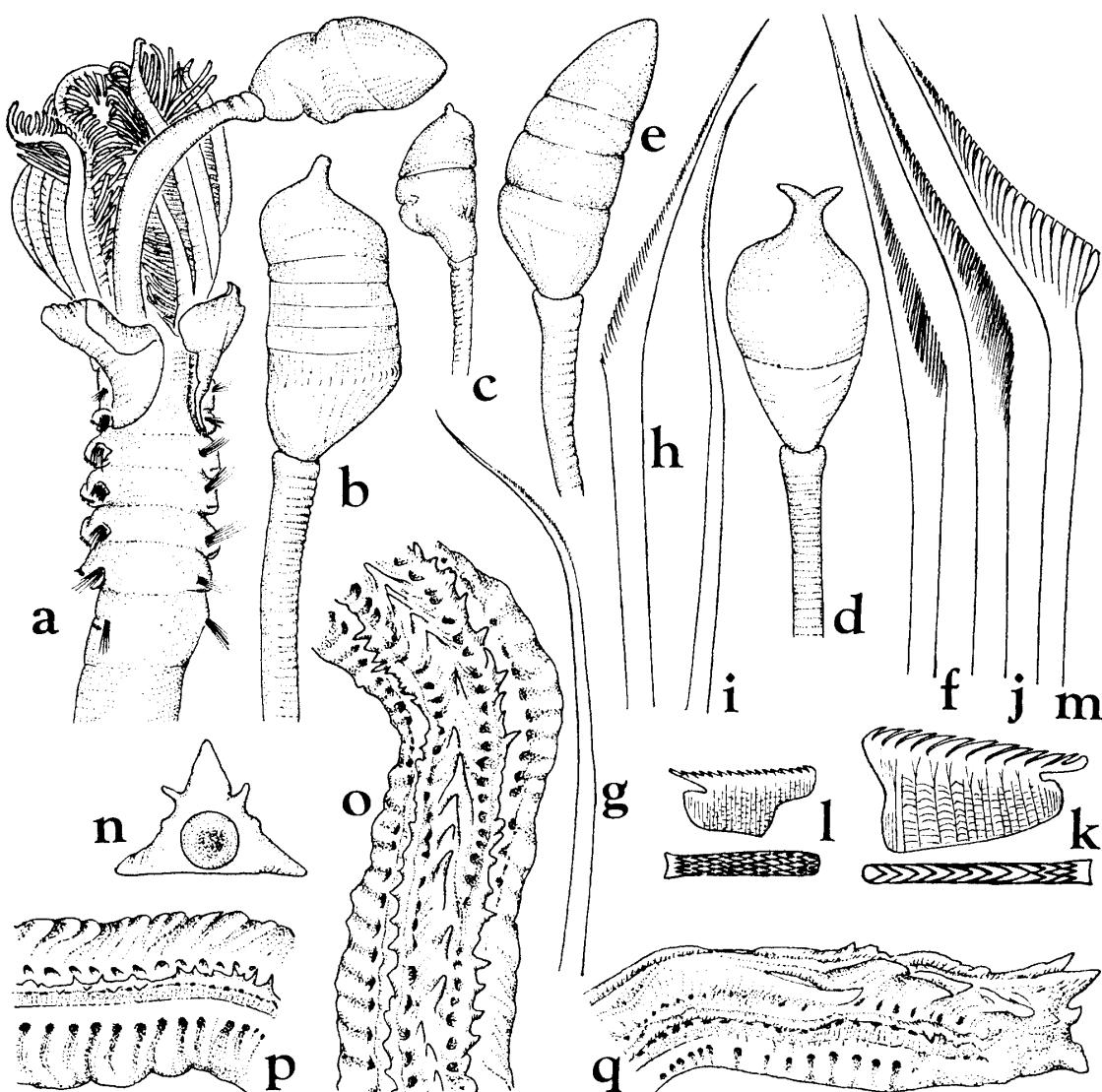


Fig. 5. *Semivermilia elliptica* sp. nov. a, anterior end of holotype, in dorsal view, $\times 34$; b-e, opercula of paratypes, in lateral and dorsal views, $\times 40$; f, g, collar setae, $\times 940$; h, i, thoracic limbate setae, $\times 625$; j, thoracic "Apomatus"-seta, $\times 625$; k, thoracic uncinus, in side and end views, $\times 940$; l, abdominal uncinus, in side and end views, $\times 940$; m, abdominal seta, $\times 940$; n, cross-section of tube, $\times 20$; o-q, tubes, p, in side view, $\times 20$.

it is cylindrical, with many wrinkles. The operculum consists of a proximal soft, globular part, and a thin, horny terminal cap. This cap is conical, without internal septa (Fig. a) in the holotype, variable in shape in the paratypes: cylindrical to elongate conical with 3 to 5 internal septa, with or without a single or bifid distal horn (Figs. b-e).

The collar is divided into a laciniated medio-ventral triangular flap, and paired rounded latero-dorsal lobes. The latter are continuous with the thoracic membranes, which end just posterior to the first row of uncini (setiger 2, Fig. a).

The thorax has 7 segments, 6 of which are uncinigerous. The bundles of collar setae are small, containing only a few setae of two types: limbate setae (Fig. f) and minutely serrated capillaries (Fig. g). The subsequent thoracic setae are similar to those of the collar (Figs. h, i); in addition, "sickle" or "*Apomatus*"-setae occur from setiger 3 onwards (Fig. j). All thoracic uncini are saw- to rasp-shaped, with 12 teeth visible in profile; the uncini have 2 to 5 rows of up to 4 anterior teeth, the most anterior tooth is gouged (Fig. k). The abdominal uncini are rasp-like and about two-thirds as large as the thoracic ones, with 18 teeth visible in profile, including the anterior gouged one; they have 6 to 8 rows of teeth (Fig. l). The abdominal setae are geniculate, with a coarsely denticulate edge (Fig. m). Posteriorly they are replaced by slightly longer capillary setae.

The tube is white; it is subtriangular in cross-section, with a flattened area of attachment. A large medial and two smaller lateral teeth project around the mouth of the tube (Fig. g); these teeth are the foremost parts of a coarsely serrated medial keel and finely denticulated lateral ones. There is a row of circular pits between medial and undulating lateral keel, the latter being flanked by a longitudinal groove and a row of transverse circular to oblong pits, forming a segmented channel in the lateral walls of the tube (Figs. n-q).

REMARKS. *Semivermilia elliptica* may resemble *S. cibrata* (COSTA, 1861) from the Mediterranean Sea, in having an elongate, conical operculum. However, the species differs from *S. cibrata* in its tube: in *S. cibrata* without undulating keels, and with a paired row of broad inner cavities in a broad flattened area of attachment. The tube of *S. elliptica* shows a superficial resemblance to those of *Pseudovermilia fuscostriata* TEN HOVE, 1975 and *P. multispinosa* (MONRO, 1933), which however do not have undulating keels and have more rows of pits.

This is the first record of the genus from Japan.

TYPE-SERIES. Holotype, NSMT-Pol. H 134; 38 paratypes, NSMT-Pol. P 135, tHU 296.

DISTRIBUTION. Southern Japan (30–85 m depth).

Genus **Metavermilia** BUSH, 1904

Metavermilia acanthophora (AUGENER, 1914)

Vermiliopsis acanthophora AUGENER, 1914, pp. 155–158, pl. 1, figs. 21–24; DEW, 1959, p. 32, fig. 9, A-E; STRAUGHAN, 1967 a, p. 234.

Metavermilia acanthophora: TEN HOVE, 1975, p. 57; IMAJIMA, 1976 a, pp. 138–139, fig. 10, a-k; 1977, p. 97.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 14 (1). Off Ōshima, dredge sta. 6 (1).

REMARKS. The opercula of the specimens have two and six parallel tiers; a long spine arises from the centre of the terminal tier.

DISTRIBUTION. Southern Japan (Tanega-shima, Ogasawara Islands, 30–75 m depth); Western and eastern Australia.

Metavermilia spicata IMAJIMA, 1977

Metavermilia spicata IMAJIMA, 1977, pp. 97–99, fig. 5.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 2 (1), sta. 11 (6), sta. 12 (4), sta. 13 (9), sta. 14 (1), sta. 15 (1), sta. 17 (1). Off Ōshima, dredge sta. 6 (9).

DISTRIBUTION. Southern Japan (30–94 m depth).

Metavermilia inflata IMAJIMA, 1977

Metavermilia inflata IMAJIMA, 1977, pp. 99–100, fig. 6.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 11 (4), sta. 12 (3), sta. 17 (1).

DISTRIBUTION. Southern Japan (65–94 m depth).

Metavermilia ovata sp. nov.

(Fig. 6, a–n)

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 11 (holotype and 9 paratypes), sta. 13 (2), sta. 14 (1), sta. 17 (2). Off Ōshima, dredge sta. 5 (1), sta. 16 (1), sta. 17 (1).

DESCRIPTION. The holotype is, including branchiae, 7 mm in length, and about 0.6 mm in width in the thorax; it consists of 68 segments.

The eight pairs of gill-radioles have a pectiniform arrangement; they are not connected by a branchial membrane; all gill-radioles end distally in a short pinnule-free tip. The second radiole on the right side is transformed into a large flat, ribbon-like opercular stalk; it is wingless.

The operculum consists of a proximal soft, globular part, and a distal, brown horny part. The globular part is bilateral symmetrical (dorsal side rather straight, ventral side bulging) (Fig. a), and ends in a simple, rather thick concave distal plate. This plate carries an ovoid process, with a terminal and a basal hook ventrally; in one of the paratypes the otherwise simple basal hook is bifid (Figs. a–e).

The collar is large and divided into an unpaired medio-ventral triangular flap, and paired, rounded, latero-dorsal lobes. The latter are continuous with the thoracic membranes, which end just posterior to the fifth uncinigerous segment.

The thorax has 7 segments, 6 of which are uncinigerous. The bundles of collar setae are very small, containing coarse limbate setae (Fig. f) and slender capillary ones

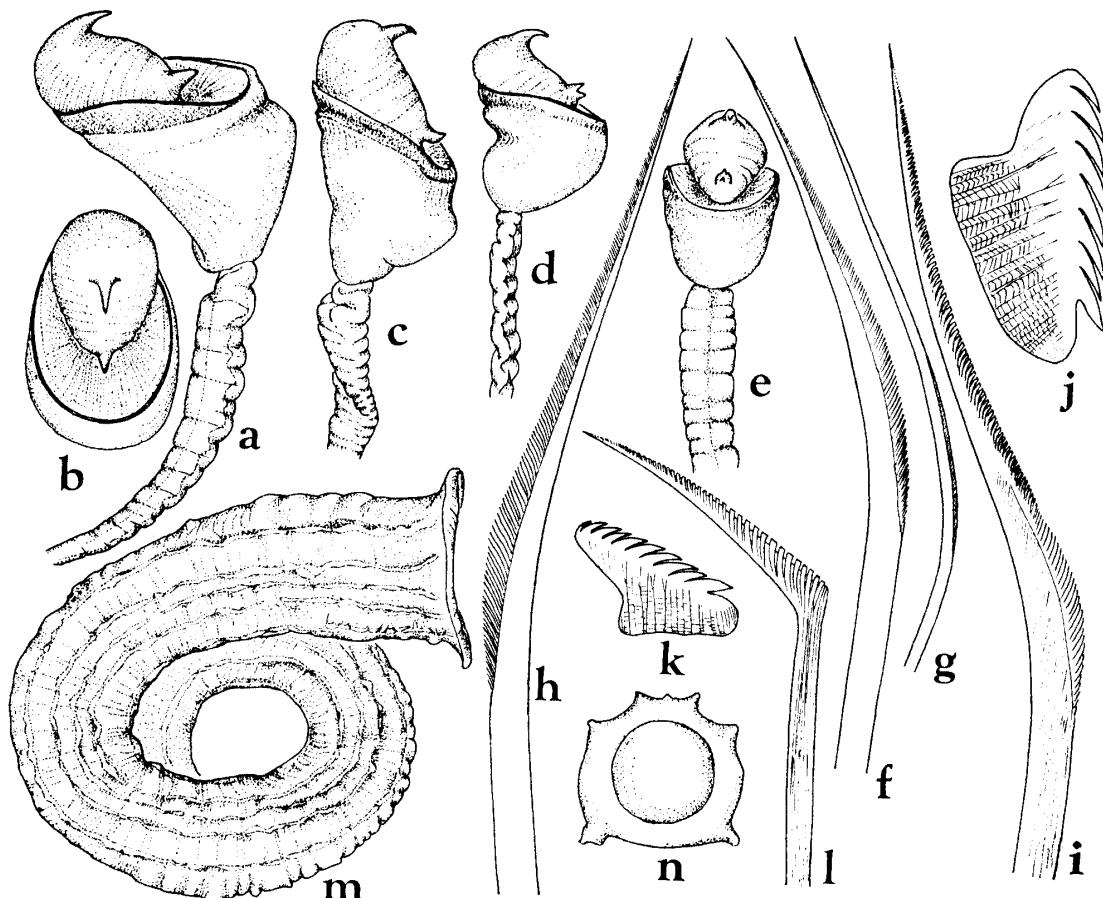


Fig. 6. *Metavermilia ovata* sp. nov. a, operculum of holotype, in lateral view, $\times 33$; b, the same, in frontal view, $\times 33$; c-e, opercula of paratypes, in lateral and ventral views, $\times 33$; f, g, collar setae, $\times 520$; h, thoracic limbate seta, $\times 520$; i, thoracic "Apomatus"-seta, $\times 770$; j, thoracic uncinus, $\times 770$; k, abdominal uncinus, $\times 770$; l, abdominal seta, $\times 770$; m, tube, $\times 16$; n, cross-section of tube, $\times 33$.

(Fig. g). The subsequent thoracic setae are similar to those of the collar; in addition, "sickle" setae or "Apomatus"-setae with a denticulate blade and a slightly limbate proximal zone are present from setiger 3 onwards (Figs. h, i). The thoracic uncini are saw-shaped, with 8 teeth; the most anterior tooth is simple and larger than the remaining ones (Fig. j). The abdominal uncini are about two-thirds as large as the thoracic ones, with 9 to 10 teeth including the anterior one (Fig. k). The abdominal setae are geniculate, with a coarsely denticulate edge (Fig. l); these are replaced by long capillary setae in the posterior segments.

The tube is white; it is sub-circular in cross-section, with 5 longitudinal ridges; the median ridge is slightly less developed than the others. The orifice is widened out into a simple funnel-shaped peristome (Figs. m, n).

REMARKS. *Metavermilia ovata* can be easily distinguished from the other species of *Metavermilia* by its very characteristic operculum.

TYPE-SERIES. Holotype, NSMT-Pol. H 136; 9 paratypes, NSMT-Pol. P 137, tHU 293.

DISTRIBUTION. Southern Japan (23–94 m depth).

Metavermilia gravitesta sp. nov.

(Fig. 7, a-m)

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 13 (5), sta. 17 (holotype and 3 paratypes). Off Ōshima, dredge sta. 6 (1), on gravel; Sagami, Misaki, Yokosuka Sound and Okinose, 19·VI, 28·VI, 1·VII, 1914, Dr. Sixten Bocks Japan Exp. Dredged, 120–600 m (4); material in the Uppsala Museum, identified by H. A. TEN HOVE.

DESCRIPTION. The holotype measures about 16 mm in length and about 1 mm in width in the thorax; it consists of 106 segments.

The branchiae have on either side 13 gill-radioles, which have a pectiniform arrangement and are not connected by a branchial membrane; they have filamentary distal tips.

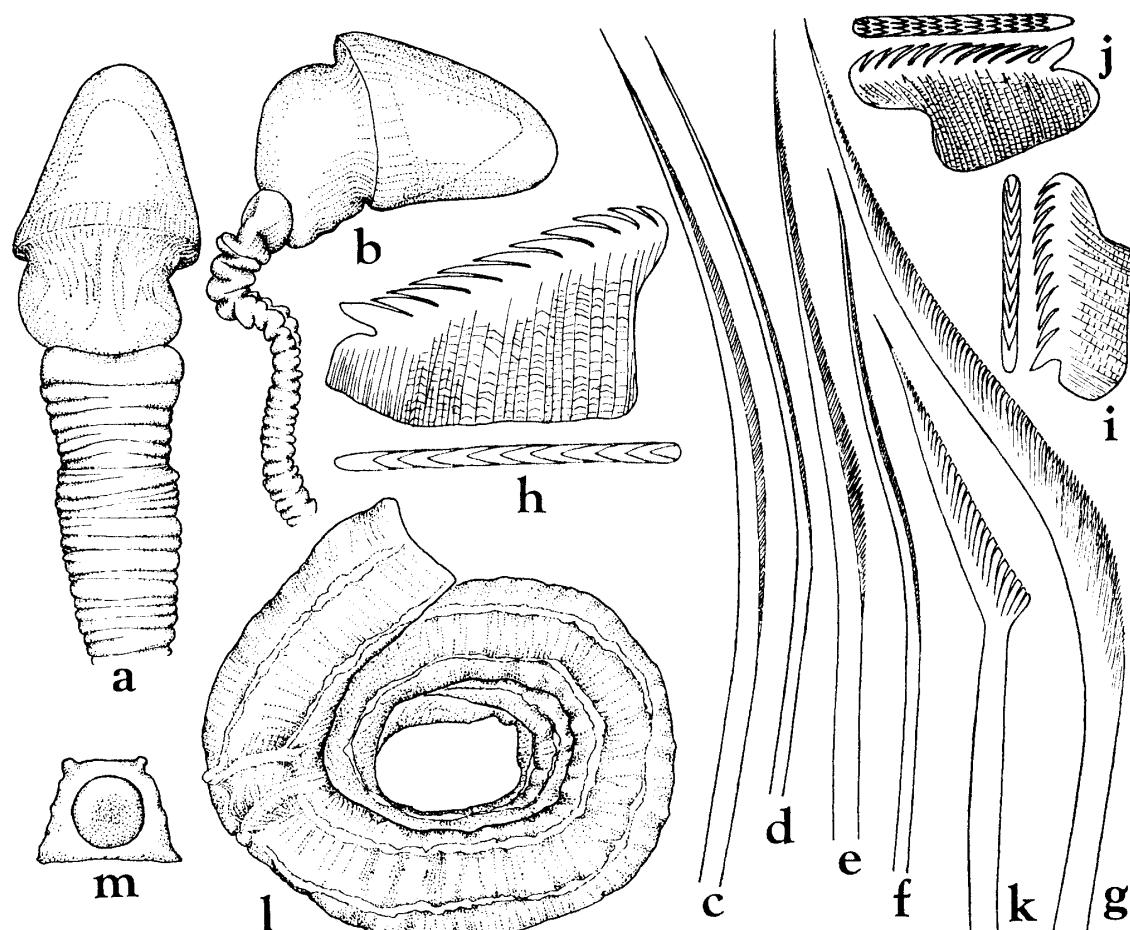


Fig. 7. *Metavermilia gravitesta* sp. nov. a, operculum of holotype, in dorsal view, $\times 35$; b, the same, in lateral view, $\times 35$; c, d, collar setae, $\times 335$; e, f, thoracic limbate capillary setae, $\times 370$; g, thoracic "Apomatus"-seta, $\times 545$; h, thoracic uncinus, in side and frontal views, $\times 825$; i, anterior abdominal uncinus, in side and frontal views, $\times 825$; j, posterior abdominal uncinus, in side and frontal view, $\times 825$; k, abdominal seta, $\times 825$; l, tube, $\times 9$; m, cross-section of tube, $\times 9$.

The paratypes have 12 to 18 gill-radioles on either side. The second radiole on the right or left side is transformed into a large flat, ribbon-like opercular stalk; it is irregularly annulated and wingless (Fig. a).

The operculum consists of a proximal soft globular part, and a distal, yellow-brown horny part. The latter is hemispherical to curved conical, or cylindrical with a curved conical top; the wall of this horny cap is thick and smooth (Figs. a, b); it is without calcareous deposit.

The collar has an unpaired medio-ventral lobe and two wide latero-dorsal ones. The latter are continuous with the narrow thoracic membranes, which end just posterior to the fifth or sixth uncinigerous segment. The thorax has 7 segments, 6 of which are uncinigerous. The small fascicles of collar setae contain only a few limbate capillary setae of two sizes (Figs. c, d). The subsequent thoracic setae are similar to those of the collar; in addition, "sickle" or "*Apomatus*"-setae with a denticulate blade and a short, limbate proximal zone are present from setiger 3 onwards (Figs. e-g). Thoracic uncini are saw-shaped, with 11 teeth; the most anterior tooth is simple and larger than the remaining ones (Fig. h). Anterior abdominal uncini are similar to the thoracic ones, also with 11 teeth in one row (Fig. i); posteriorly they are replaced by rasp-shaped ones, with 3 rows of minute teeth, with 12 teeth visible in profile (Fig. j). Abdominal setae are geniculate, with a coarsely denticulate edge (Fig. k). The two geniculate setae per fascicle are replaced by long capillary setae in the posterior segments.

The tube is white, and may be irregularly coiled upon itself; it is trapezoidal in cross-section, with two longitudinal ridges and some flaring "peristomes" encircling the tube; the surface area between the two ridges is rather flat (Figs. l, m). The longitudinal ridges may be very faint in semidetached tube-parts.

REMARKS. *Metavermilia gravitesta* resembles *M. multicristata* (PHILIPPI, 1844) from the Mediterranean Sea and *M. taenia* ZIBROWIUS, 1971 from off Portugal, in having a simple globular horny operculum. However, *M. gravitesta* is differing from *M. multicristata* in its tube, and it can be also distinguished from *M. taenia* by the form of the thoracic "sickle" setae and by the tube.

TYPE-SERIES. Holotype, NSMT-Pol. H 140; 3 paratypes, NSMT-Pol. P141, tHU 294.

DISTRIBUTION. Southern Japan (30–600 m depth).

Metavermilia truncata sp. nov.

(Fig. 8, a-o)

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 13 (1). Off Ōshima, dredge sta. 6 (holotype and 1 paratype), on gravel.

DESCRIPTION. The holotype is the largest specimen and measures about 14 mm in length and about 0.8 mm in width in the thorax; it consists of 84 segments.

The branchiae have on either side 11 gill-radioles, which have a pectiniform arrangement and are not connected by a branchial membrane; all gill-radioles end distally in filamentar, tips. The second radiole on the left side is transformed into a large, ribbon-

like opercular stalk; it is irregularly annulated, and wingless.

The operculum is elongate conical. It is composed of eight dark brown parallel discs, fringed by yellow, bifurcated spines with round tips. Each disc covers the lower part of the next distal disc, the most distal one consists of seven simple spines (Figs. a-c). The operculum of the paratype has six parallel discs.

The collar has one ventral lobe and two latero-dorsal ones. The latter are continuous with the thoracic membranes, which end posterior to the sixth uncinigerous segment. The thoracic membranes are rather broad anteriorly, but the posterior part of the thorax is widely unprotected (Fig. d).

The thorax has 7 segments, 6 of which are uncinigerous. The small fascicles of collar setae contain only a few thick (Fig. e) and slender (Fig. f) limbate capillaries. The

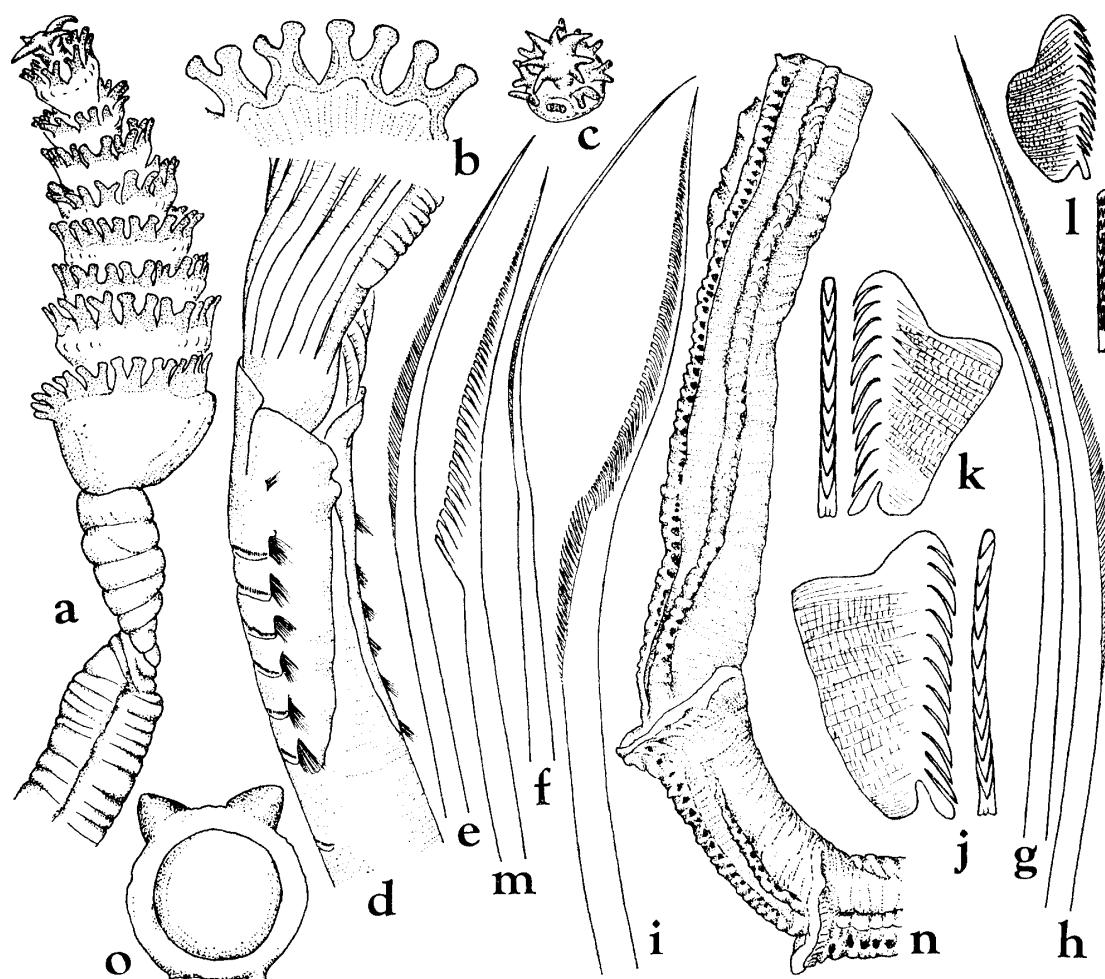


Fig. 8. *Metavermilia truncata* sp. nov. a, operculum of holotype, $\times 30$; b, part of an opercular disc, showing bifurcated spines, $\times 56$; c, top of operculum, in latero-frontal view, $\times 35$; d, anterior end of worm, showing thoracic membrane, $\times 18$; e, f, collar setae, $\times 335$; g, h, thoracic limbate setae, $\times 335$; i, thoracic "Apomatus"-seta, $\times 460$; j, thoracic uncinus, in side and frontal views, $\times 825$; k, anterior abdominal uncinus, in side and frontal views, $\times 825$; l, posterior abdominal uncinus, in side and frontal views, $\times 825$; m, abdominal seta, $\times 825$; n, tube, $\times 9$; o, cross-section of tube, $\times 18$.

subsequent thoracic bundles have slender and thick limbate capillaries (Figs. g, h) and "sickle" or "*Apomatus*"-setae with a denticulate blade and a short, limbate proximal zone (Fig. i). The thoracic uncini are saw-shaped, with 12 teeth; the most anterior tooth is truncated, and has a minute median tubercle in frontal view (Fig. j). Anterior abdominal uncini are similar but slightly smaller than the thoracic ones, with 11 teeth, including a truncated anterior tooth (Fig. k); posteriorly they are transformed into rasp-shaped ones, with 4 rows of minute teeth, with 13 teeth visible in profile, including a truncated anterior tooth (Fig. l). The abdominal setae are geniculate, with a coarsely denticulate edge (Fig. m); they are replaced by long capillary setae in the posterior segments.

The tube is white; it is sub-circular in cross-section. It has two thick, longitudinal ridges, perforated by a row of circular pits in their bases. Some flaring "peristomes" encircle the tube (Figs. n, o).

REMARKS. *Metavermilia truncata* is closely related to *M. spicata* IMAJIMA, 1977 from Ogasawara Islands. However, *M. truncata* can be distinguished from the latter by the form of the operculum and by the tube. Although the form of the anterior teeth of the uncini of the present species is different from the uncini displayed by typical *Metavermilia* species, the remaining characters justify a tentative attribution of the species to this genus.

TYPE-SERIES. Holotype, NSMT-Pol. H 142; 1 paratype, NSMT-Pol. P 143.

DISTRIBUTION. Southern Japan (30–75 m depth).

Genus **Placostegus** PHILIPPI, 1844

Placostegus tridentatus (FABRICIUS, 1780)

(Fig. 9, a-l)

Placostegus tridentatus: WOLLEBACK, 1912, pp. 117–118, pl. 47, figs. 1–8, pl. 51, figs. 2–3; FAUVEL, 1927, p. 373, fig. 128, h-p (in part); ZIBROWIUS, 1973, pp. 74–75.

MATERIAL EXAMINED. Off Ō-shima, dredge sta. 6 (13).

DESCRIPTION. The largest specimen is, including the operculum, 11 mm in length, and 0.8 mm in width in the thorax; it consists of 72 setigerous segments.

The branchiae have 9 pairs of gill-radioles on either side, which end in slender, pinnule-free tips. The gill-radioles are arranged in two semi-circles.

The opercular peduncle is cylindrical, and arises from the left branchial lobe, just below and between the first and second normal filament. The operculum is cup-shaped, with a fleshy bulbous part and a horny concave plaque terminally, with a smooth margin. There is a deep pit in the centre of this horny plaque, forming a "talon" or handle into the fleshy bulb (Figs. a-c).

The collar is divided into an unpaired medio-ventral flap with a deeply indented margin, and paired triangular latero-dorsal lobes. The latter are continuous with the broad thoracic membranes, which are united ventrally on the anterior abdominal segments (Figs. a, d).

The thorax has 6 setigers; collar setae are absent, instead there is a nearly encircling

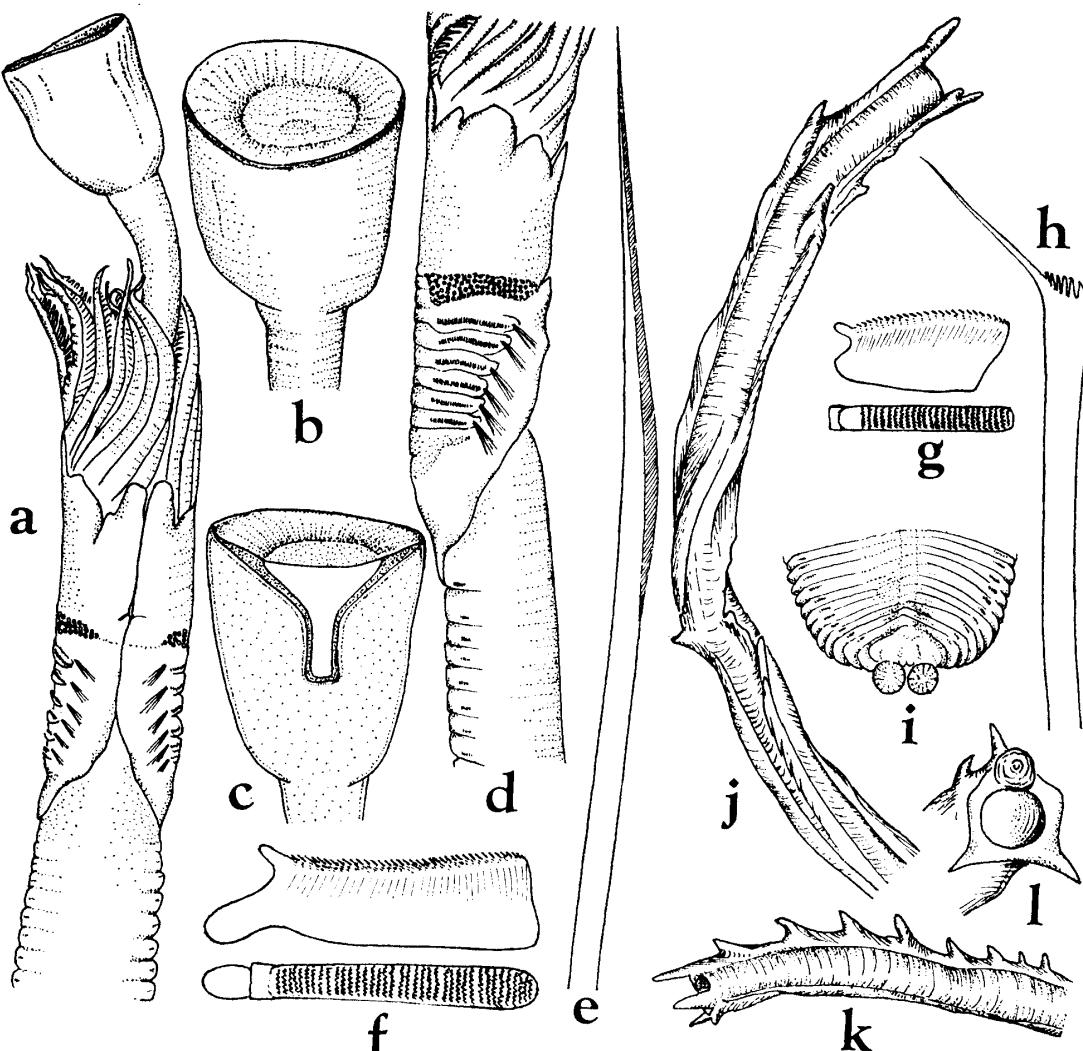


Fig. 9. *Placostegus tridentatus* (FABRICIUS). a, anterior part of worm, in dorsal view, $\times 20$; b, operculum, in dorso-lateral view, $\times 35$; c, cross-section of operculum, showing a "talon" into fleshy bulb, $\times 35$; d, anterior part of worm, without operculum, in lateral view, $\times 20$; e, thoracic limbate seta, $\times 940$; f, thoracic uncinus, in side and frontal views, $\times 940$; g, abdominal uncinus, in side and frontal views, $\times 940$; h, abdominal seta, $\times 940$; i, pygidium, in dorsal view, $\times 40$; j, k, tubes, in side view, $\times 6$; l, mouth of tube, in frontal view, $\times 10$.

girdle of clear cells, maybe glandular (Figs. a, d). The thoracic setae are all limbate capillaries of the same thickness (Fig. e). The thoracic uncini are sub-rectangular with a basal, elongate process; they are broadly rasp-shaped, with up to about 8 rows of minute teeth, with about 32 to 38 teeth visible in profile, and a truncated anterior tooth (Fig. f). The abdominal uncini are about two-thirds as large as the thoracic ones; they are rasp-shaped too, with up to 8 rows of minute teeth, with about 23 teeth visible in profile; they have no a basal process as the thoracic ones (Fig. g). The abdominal setae are all compressed trumpet-shaped, with 6 marginal teeth arranged in a row and terminating in a long fine point (Fig. h). The pygidium terminates in a pair of oval ventral cirri (Fig. i).

The tube is clear as glass; it has three projecting teeth around the entrance, of which

the medial one is the largest. The anterior part of the tube is free from the substrate, it has three longitudinal keels, of which the originally medial one is the largest, and has a more pronounced series of teeth than the lateral keels (Figs. j-l).

REMARKS. Although the genus is in need of a revision material examined has tentatively been referred to *Placostegus tridentatus*. However, it may differ from it in the form of thoracic uncini with a basal, elongate process, instead of subrectangular ones (WOLLEBACK, 1912, pl. 47, fig. 8).

This is the first record of the genus in Japan.

DISTRIBUTION. Norway; Atlantic and Mediterranean Sea; Japan (up to 75 m depth).

Genus **Ditrupa** BERKELEY, 1835

Ditrupa arietina (O. F. MÜLLER, 1776)

Ditrupa arietina: FAUVEL, 1927, pp. 374-375, fig. 128, a-g; 1932, p. 247; 1953, p. 470, fig. 246, a-g; MONRO, 1937, p. 319; WESENBERG-LUND, 1949, p. 358; IMAJIMA, 1964, pp. 48-50, text-fig. 1-5; ZIBROWIUS, 1968, pp. 169-171, pl. 9, fig. 8-13; 1973, pp. 78-79.

MATERIAL EXAMINED. Off Nii-jima, dredge sta. 2 (2), sta. 13 (4), sta. 16 (1), sta. 17 (2), sta. 18 (2). Off Ō-shima, dredge sta. 6 (24), sta. 7 (13).

REMARKS. All tubes are empty, elephant tusk-shaped, curved and tapering; the largest one is 39 mm in length.

DISTRIBUTION. Western Europe; Mediterranean Sea; Red Sea; Indian Ocean; Philippine Islands; Japan (up to 85 m depth).

Genus **Protula** RISSO, 1826

Protula tubularia caeca IMAJIMA, 1977

Protula tubularia caeca IMAJIMA, 1977, pp. 106-108, fig. 10.

MATERIAL EXAMINED. Kurone Harbur (13), Wakago Harbur (2), Nii-jima, on rocks in the intertidal region. Off Nii-jima, dredge sta. 2 (7), sta. 11 (9), sta. 12 (2), sta. 13 (12), sta. 14 (4), sta. 17 (9). Off Ō-shima, dredge sta. 5 (2), sta. 6 (2), sta. 17 (4).

DISTRIBUTION. Southern Japan (up to 94 m depth).

Zoogeography

The two islands Nii-jima and Ō-shima, Izu Islands, are almost always influenced by the Kuroshio current. The sea-surface temperatures range from 15°C to 28°C. Of the 25 recorded species of the Serpulidae 7 have a wide Indo-Pacific distribution, another 6 species have a nearly world-wide or circum-tropical one. The remaining 12 species have a distribution limited to Japan, as far as known yet.

要 約

伊豆・マリアナ弧諸島の自然史科学的総合研究の第2年目として、1977年7月に伊豆諸島のうちの新島と大島の周辺海域で海産無脊椎動物相の調査を行った。両島での磯採集ならびにドレッヂによる採集の結果、多くの種類が得られたが、そのうちで多毛環虫類のカンザシゴカイ科 (Serpulidae) の種類が研究された。

両島から得られた11属、25種には5新種、*Pseudovermilia pacifica*, *Semivermilia elliptica*, *Metavermilia ovata*, *Metavermilia truncata*, *Metavermilia gravitesta*, 3日本新記録種, *Serpula cf. kaempferi*, *Hydroides dirampha*, *Placostegus tridentatus* が含まれる。そして *Pseudovermilia*, *Semivermilia*, *Placostegus* の3属は今まで日本で報告されていなかった。

報告された25種のうち、*Serpula cf. kaempferi*, *Hydroides tuberculata*, *Hydroides albiceps*, *Pomatoleios krausii*, *Spirobranchus latiscapus*, *Spirobranchus giganteus corniculatus*, *Metavermilia acanthophora* の7種がインド・太平洋域に広く分布しており、*Hydroides dirampha*, *Spirobranchus cf. polytrema*, *Vermiliopsis labiata*, *Vermiliopsis infundibulum/glandigera*-group, *Placostegus tridentatus*, *Ditrupa arietina* の6種が地中海、大西洋を含む広い海域に分布している。そして、*Hydroides fusca*, *Hydroides fusicola*, *Hydroides multispinosa*, *Hydroides ezoensis*, *Metavermilia spicata*, *Metavermilia inflata*, *Protula tubularia caeca* の6種と1亜種、それに5新種を合せた合計12種が現在のところ日本固有種であり、これは全種数のほぼ1/2にあたる。既知の7日本固有種は北方海域に主たる分布をもつ *Hydroides ezoensis* を除いて、いずれも九州以南や小笠原諸島の南方海域から採集されている。新しく記載された新種は島嶼によるための種分化の結果両島のみに限って分布しているものか、あるいは黒潮海域の他の場所にも分布しているものは今後の該当海域における調査にまたねばならない。

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